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Indian Standard
SPECIFICATION FOR OIL OF GINGER
(First Revision)

UDC 665·524·83

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December 1988

AMENDMENT NO. 1 MAY 1997
TO
IS 761:1988 SPECIFICATION FOR OIL OF GINGER

(First Revision)

(*Page* 2, *clause* 6.2, *line* 3) — Substitute 'IS 1070 : 1992†' *for* 'IS 1070 - 1977†'.

(*Page* 2, *foot-note with* '†' *mark*) — Substitute 'Reagent grade water (*third revision*)' for the existing matter.

(*Page* 3, *Appendix* A, *clause* A-1.1) — Substitute the following GC conditions for the existing:

Column	
a) Material	Stainless steel
b) Length	3 m
c) I.D.	0.318 cm
d) Stationary phase	FFAP*, 10 percent by mass or any other suitable polar column
e) Solid support	Chromosorb WHP (80-100 mesh)
Carrier gas	*Nitrogen*
Flow rate	30 ml/*min*
Conditions	
a) Column temperature programming	100 to 200°C
Programming	4°C
b) Injection port temperature	225°C
Detector	
a) Type	F.I.D.
b) Temperature	250°C

Amend No. 1 to IS 761 : 1988

(*Page* 3, *Fig.* 1) — Substitute the following figure for the existing:

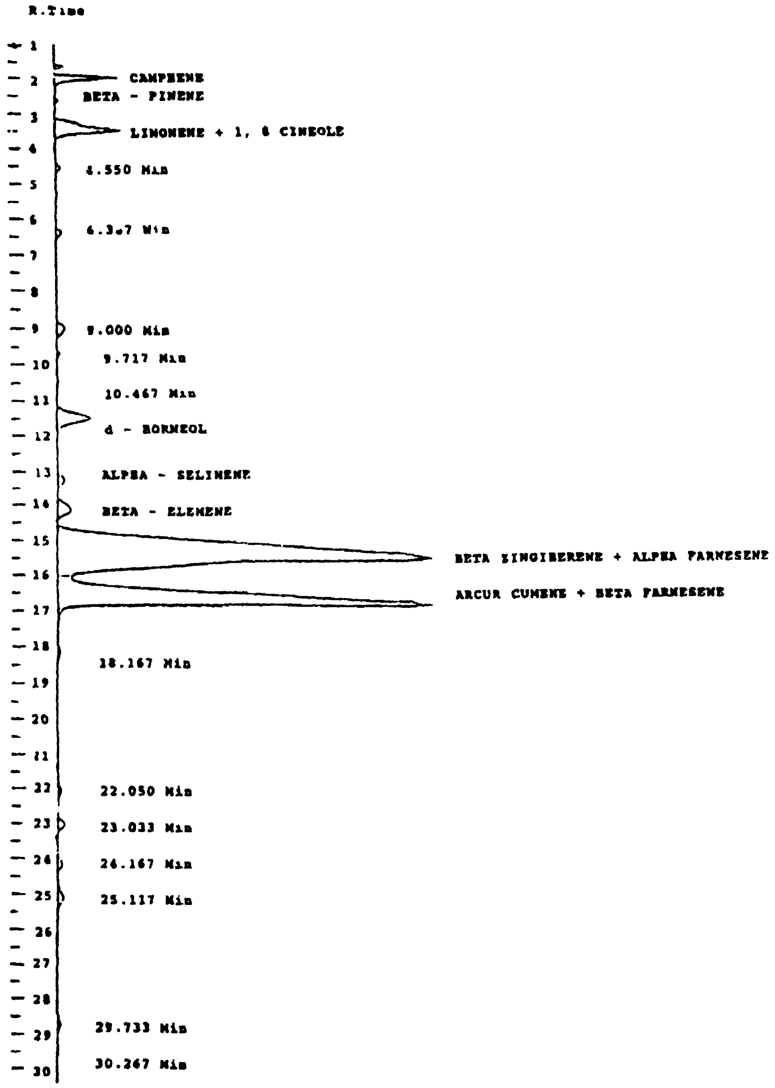

FIG. 1 TYPICAL CHROMATOGRAM OF OIL OF GINGER

(PCD 18)

Reprography Unit, BIS, New Delhi, India

Indian Standard
SPECIFICATION FOR OIL OF GINGER
(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards on 25 March 1988, after the draft finalized by the Natural and Synthetic Perfumery Materials Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

0.2 This standard was first published in 1955. It has been observed that the physico-chemical characteristics of the oil produced in India generally agree with those of the oil produced elsewhere in the world. The Sectional Committee responsible for the preparation of this standard felt that the standard should be revised with a view to bring it in line with the trade practices prevalent in perfumery technology and adjust with the quality level of the material currently being produced and sold in the country.

0.3 India is the largest producer of ginger (*Zingiber offiaianale*, Roscoe) and is also one of the largest exporters of ginger, ginger oil and ginger oleoresin. Ginger is grown in Kerala, Meghalya, Orissa, Himachal Pradesh, West Bengal, Andhra Pradesh and other states of India. It is used as a flavouring agent in aerated waters, confectionary and as a spice for culinary purposes.

0.4 Gas chromatographic method of analysis has been included in this revision under Appendix A for guidance only.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard prescribes the requirements, and methods of sampling and test for the oil of ginger.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions as given in IS : 6597-1988* shall apply.

3. REQUIREMENTS

3.1 Description

3.1.1 *Source* — The oil of ginger shall be obtained by water or steam distillation of coarsely ground (partially dried after ground) rhizome of ginger (*Zingiber officianale*, Roscoe).

3.1.2 The material shall be a clear liquid, free from sediment, suspended matter, separated water and adulterants, when tested as prescribed in IS : 326 (Part 2)-1980†.

3.1.3 The oil shall be tested olfactorily and especially for by notes as prescribed in IS : 2284-1988*.

3.2 Solubility — The material shall be soluble with not more than a slight turbidity in one volume of ethanol when tested as prescribed in IS : 326 (Part 6)-1986†.

3.3 The material shall also comply with the requirements given in Table 1.

4. PACKING AND MARKING

4.1 Packing — The material shall be supplied in air-tight and preferably amber-coloured glass, aluminium or tin-plate containers, permitting a minimum of air space or as agreed to between the purchaser and the supplier.

4.1.1 The material shall be protected from light and stored in a cool and dry place.

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*Glossary of terms relating to natural and synthetic perfumery materials (*first revision*).

†Methods of sampling and test for natural and synthetic perfumery materials: Part 2 Preliminary examination of perfumery materials and samples (*second revision*).

*Methods for olfactory assessment for natural and synthetic perfumery materials (*first revision*).

†Methods of sampling and test for natural and synthetic perfumery materials: Part 6 Determination of solubility (*second revision*).

TABLE 1 REQUIREMENTS FOR OIL OF GINGER

(*Clause* 3.3)

Sl No.	Characteristic	Requirement	Method of Test, Ref to IS : No.
(1)	(2)	(3)	(4)
i)	Colour and appearance	Light yellow to greenish yellow liquid	IS : 326 (Part 2)-1980*
ii)	Odour	Sharp lemony top note with persistent dry spicy note	IS : 2284-1988†
iii)	Relative density‡ at 27°/27°C	0·866 to 0·880	IS : 326 (Part 3)-1980*
iv)	Optical rotation	−28° to −48°	IS : 326 (Part 4)-1980*
v)	Refractive index§ at 27°C	1·484 0 to 1·494 0	IS : 326 (Part 5)-1986*
vi)	Saponification value (using about 5 g of the material), *Max*	20	IS : 326 (Part 8)-1980*

*Methods of sampling and test for natural and synthetic perfumery materials:

Part 2 Preliminary examination of perfumery materials and samples (*second revision*)
Part 3 Relative density (*second revision*)
Part 4 Determination of optical rotation (*second revision*)
Part 5 Determination of refractive index (*second revision*)
Part 8 Determination of ester value, content of esters and combined alcohols (*second revision*)

†Method for olfactory assessment of natural and synthetic perfumery materials (*first revision*).

‡The correction factor for relative density for each degree Celsius change in temperature is 0·000 64.

§The correction factor for refractive index for each degree Celsius change in temperature is 0·000 20.

4.2 Marking — Each container so filled shall bear legibly and indelibly the following information:

a) Name of the material;

b) Name of the manufacturer and his recognized trade-mark, if any;

c) Batch number and date of manufacture; and

d) Net and gross mass.

4.2.1 The container may also be marked with the Standard Mark.

Note — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

5. SAMPLING

5.1 Representative samples of the materials shall be drawn as prescribed in IS : 326 (Part 1)-1984*.

5.2 All the characteristics given in the specification shall be tested on the composite sample. The lot shall be declared as conforming to the requirements of this specification, if all the test results on the composite sample meet the relevant specification requirements.

6. TESTS

6.1 Tests shall be carried out as prescribed under **3.1**, **3.2** and **3.3**. The appropriate reference to relevant test methods are given in col 4 of Table 1.

6.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1977†) shall be employed in tests.

Note — Pure chemicals shall mean chemicals that do not contain impurities which affect the results of analysis.

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*Methods of sampling and test for natural and synthetic perfumery materials: Part 1 Sampling.

†Specification for water for general laboratory use (*second revision*).

APPENDIX A

(*Clause* 0.4)

GAS CHROMATOGRAPHIC ANALYSIS FOR OIL OF GINGER

A-0. GENERAL

A-0.1 The chromatographic conditions given here are for guidance only.

A-0.2 Outline of the Method — A sample of the material is dissolved in suitable solvent (for example, cyclohexane and diethyl ether) and is injected into the gas chromatograph where it is carried by the carrier gas from one end of the column to the other. During its movement, the constituents of the sample undergo distribution at different rates and ultimately get separated from one another. The separated constituents emerge from the end of the column one after another and are detected by suitable means whose response is related to the amount of a specific component leaving the column.

A-1. APPARATUS

A-1.1 Any gas chromatograph capable of being operated under conditions suitable for resolving the individual constituents into distinct peaks may be used. The typical chromatogram for oil of ginger using a chromatograph with the following chromatographic conditions is shown in Fig. 1.

Column	
a) Material	Copper
b) Length	3·65 m
c) O.D.	0·635 cm
d) I.D.	0·476 cm
e) Stationery phase	FFAP*, 10 percent by mass
f) Solid support	Chromosorb WAW 60-80 mesh
Carrier Gas	*Nitrogen*
Conditions	
a) Column temperature programming	60 to 160°C
b) Injection port temperature	200°C
Detector	
a) Type	F.I.D.
b) Temperature	280°C

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*Free Fatty Acid Phase (FFAP) is carbowax 20 M treated with nitrophthalic acid.

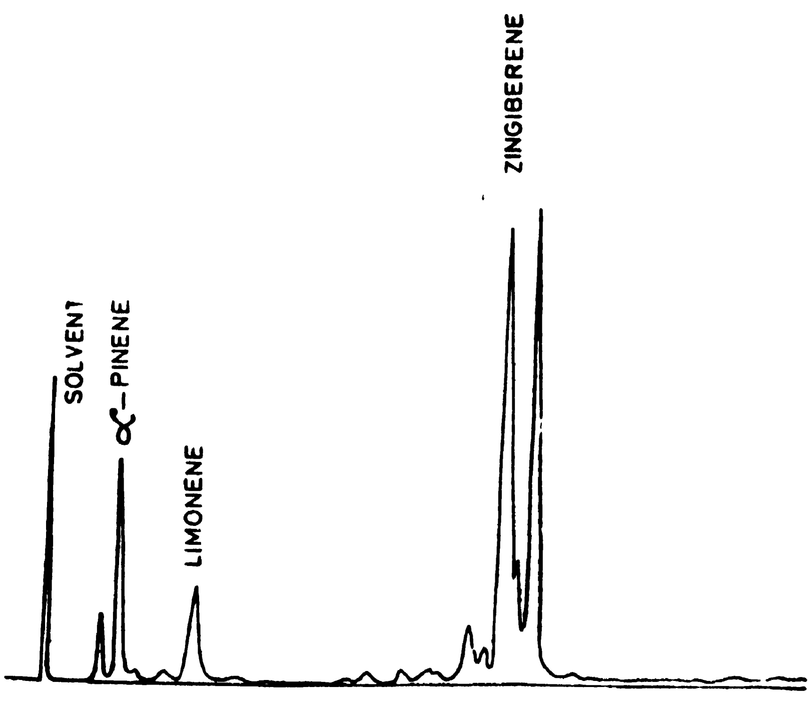

FIG. 1 TYPICAL CHROMATOGRAM OF OIL OF GINGER

A-2. CALCULATION

A-2.1 Area Measurements (*see* Note 1) — Since normal peaks approximate a triangle the area is measured by multiplying the peak height times the width of half height. The normal peak base is not taken since large deviations may be observed due to tailing or adsorption. This technique is rapid, simple and fairly accurate when peaks are symmetrical and of reasonable width.

A-2.2 Area Normalization (*see* Note 2) — By normalizing, it is meant calculating the percentage composition by measuring the area of each and dividing the individual areas by total area, for example:

$$\text{Percentage of } A = \frac{\text{Area of } A}{\text{Total Area}} \times 100$$

NOTE 1 — Other methods of area measurements, namely, triangulation, disc integrator and electronic digital integrator, if fixed with GLC machine, would be of great advantage.

NOTE 2 — Internal standardization can be used if pure appropriate internal standard is available. This method is known as relative or indirect calibration.

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Printed at Arcee Press, New Delhi, India